

AFRICA COST GUIDE

Property & Construction

2024/25



Delivering a better world.

AECOM is the world's trusted infrastructure consulting firm, partnering with clients to solve the world's most complex challenges and build legacies for future generations.

At AECOM, we believe infrastructure creates an opportunity for everyone – uplifting communities, improving access and sustaining our planet.

We're trusted advisors — planners, designers, engineers, consultants and program and construction managers — delivering professional services spanning cities, transportation, buildings, water, new energy and the environment. Working throughout the project lifecycle, we're one team driven by a common purpose to deliver a better world.

AECOM AFRICA PROPERTY & CONSTRUCTION COST GUIDE 2024/25

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FOREWORD

Niel du Pisani

Associate Director,
Cost Management, Africa



Welcome to our Africa Property and Construction Cost Guide 2024/25.

In the ever-evolving landscape of the African property and construction sector, AECOM stands as a beacon of resilience and innovation. As we reflect on our journey through the past years, from the trails of the Covid pandemic to the strides of digital transformation, our commitment to excellence and innovation shines brighter than ever before.

Over the years, the Africa Property and Construction Cost Guide has become an important resource, regularly used and referenced by key industry players. It serves as a testament to our dedication to excellence, encapsulating the essence of our relentless pursuit of progress.

We are proud to report that we have once again maintained our level one B-BBEE scorecard in terms of the Department of Trade

and Industry's revised codes, a reaffirmation of our commitment to contributing to an inclusive South Africa. Equity, diversity, and inclusion are core to our vision, in a world where AECOM creates opportunity for everyone.

In the wake of recent unprecedented challenges, we embarked on a journey of transformation. Whilst recognizing the imperative of prioritizing the safety, wellbeing, and performance

of our teams, we embraced remote-working capabilities and a hybrid workspace model. Our steadfast leadership and unwavering dedication not only fortified our operations but positioned us for continued growth and success in the face of adversity.

We continue to evolve, navigating a landscape full of uncertainties and opportunities alike. By aligning closely with our clients' needs and delivering bespoke solutions, we propelled ourselves towards new heights of success. Our investments in the latest software, digital tools, cloud-based digital innovation, and particularly in 5D BIM digital capabilities underscored our forward-thinking approach.

Fuelled by this spirit of digital innovation and collaboration, we leverage our global expertise to deliver transformative solutions that transcend all boundaries, committed to *Think and Act Globally*.

Partnering with global AECOM teams, we share workload and expertise, ensuring continuing work across all business sectors and providing our local team with rewarding international project experience.

Together, we are shaping the African property and construction sector for generations to come. As we navigate the challenges and opportunities that lie ahead, we remain steadfast in our commitment to mentoring, training, excellence, sustainability, and making a positive impact on the communities we serve.

In partnership with our clients and stakeholders, we are excitedly looking forward to the future, to embrace change, drive progress, and build a brighter future for all.

Kind regards,

The changing landscape of Africa

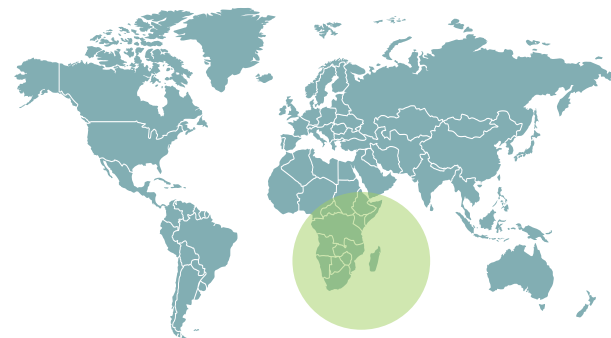
We are passionate about the development of Africa and continually seek to align ourselves with initiatives that aim to bring this development to life.

We serve private and public clients, delivering technical excellence on infrastructure and program projects, whilst keeping our communities at the forefront.

Our multidisciplinary team of award-winning engineers, planners, architects, environmental specialists, scientists, consultants, quantity surveyors (cost managers) and project and programme managers are committed to delivering projects that improve the quality of life for Africa's communities.

THE CHANGING LANDSCAPE OF AFRICA

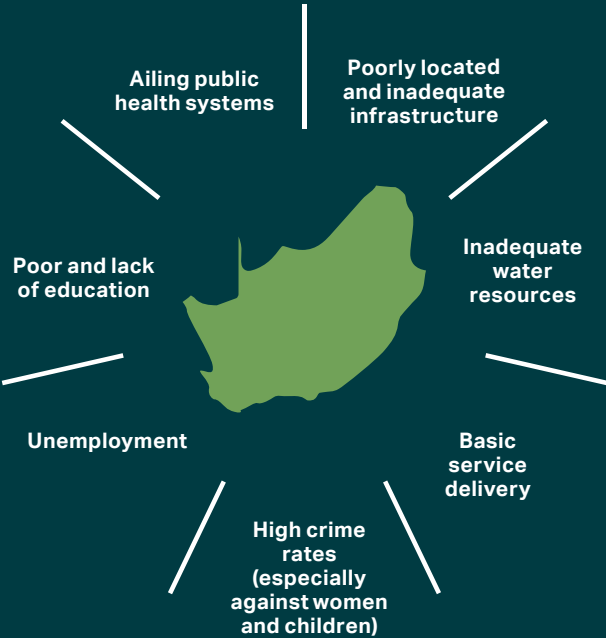
01



Improving lives

A relatively new democracy, South Africa continues to face past challenges while working to overcome new issues that will have a major impact on the socio-economic development of the country.

The key challenges facing South Africa are:



A more holistic approach, considering social and economic benefits is required when making infrastructure decisions. With evidence showing that social values such as health, quality of life and social inclusion can boost long-term economic growth, we make sure our projects and operations evaluate the whole picture and put people at the forefront to create a safer, more resilient country prepared for the future.





Bridging the skills divide

Our strategy is aimed at facilitating the empowerment of talented individuals through university and in the workplace. We believe that by providing these opportunities, young people will realise their potential to successfully enter the built environment professions.

In 2017, AECOM established the AECOM Educational Trust to provide bursaries to young black women to further their tertiary education in the built environment.

This year, AECOM's Learning and Development department, in partnership with Skills College, launched its sixth 12-month Disabled Learnership Programme. Learnerships are intended to address the gap between education, training and the needs of the labour market. To date, AECOM has sponsored nearly 100 disabled learners on this work-based approach to learning that culminates in Business Administration NQF level two and three qualifications.

As part of our commitment to improve skills, experience and excellence in the industry, AECOM offers bursaries each year to aid full-time employees and meritorious students who are studying towards the main fields of our core business. On average, eight full-time bursaries are awarded annually to talented students from disadvantaged backgrounds.

“

Learnerships are intended to address the gap between education, training and the needs of the labour market.”

AECOM Africa mentoring programme

At AECOM, mentorship is deeply rooted in our business offering. We understand its importance and how these relationships significantly impact our more junior team members and our business.

The AECOM Africa Mentoring Programme is a structured mentoring initiative designed to support and accelerate the candidacy journey across relevant professional bodies applicable to AECOM Candidate Professionals. The programme's overarching aim is to assist AECOM candidates on their journey towards professional registration and to ensure their registration within the minimum required time.

Mentorship and guidance

Our programme is supported by dedicated internal AECOM mentors and external service providers. AECOM mentors offer continuous support and guidance, aiding candidates in the completion of their professional registration applications. The mentorship component of our programme is designed to ensure that candidates receive personalized assistance, tailored to their unique developmental needs.

Developmental support and simulation scenarios

An initial assessment to establish a baseline measure for each candidate, for precise determination of candidate developmental gaps. Identifying these gaps plays a pivotal role not only for the candidates but also for AECOM subject

matter experts. It enables the creation of targeted simulation scenarios designed to provide candidates with exposure in areas where they lack sufficient experience. This practical approach ensures that candidates gain comprehensive, hands-on experience in their areas of deficiency, fostering well-rounded professional development.

Soft skills training

Recognizing the importance of well-rounded development, our programme includes extensive soft skills training on a variety of topics. These sessions cover essential skills such as personal drive, mindfulness, and emotional intelligence, among others. This holistic approach ensures that both candidates and mentors are equipped with the interpersonal skills necessary for professional success.

Executive and life coaching

In addition to the technical and soft skills training, our programme is supported by an Executive and Life Coach. This coaching provides invaluable assistance in both personal and career development, helping candidates to navigate their professional journeys with confidence and clarity.

The AECOM Africa Mentoring Programme is a testament to our commitment to developing highly skilled professionals within the business.



Sol Plaatje University
Northern Cape, South Africa

Broad-Based Black Economic Empowerment (B-BBEE)

Transformation is an important factor in South Africa's transition towards the vision of a non-discriminatory, democratic and prosperous society, as summarized in the Freedom Charter. Equity, diversity and inclusion are vital at AECOM and we know that transformation opens a path to inclusive economic growth and development.

Our B-BBEE journey continues as we set ourselves targets to continuously improve in all categories by investing in our people. We are proud to report that we have maintained our level one B-BBEE scorecard (as outlined below) in terms of the Department of Trade and the industry's revised codes — a reaffirmation of our commitment to contributing to a better South Africa.

B-BBEE Level Status:	Level 1
Procurement Recognition Level	135%
Black Ownership	20.47%
Black Women Ownership	20.47%
Black Youth Ownership	20.47%
Scorecard Information:	
Ownership	27.00 points
Management Control	18.00 points
Skills Development	29.00 points
Preferential Procurement & Supplier Development	27.00 points
Socio-Economic Development	5 points
Total	106.00 points
Empowering Supplier	Yes
Designated Group Supplier	No
Scorecard	Generic – Construction BEP Sector (10 December 2024)

Sustainable Legacies – our Environmental, Social and Governance (ESG) strategy

In ways that are both devastating and transformational, the coronavirus pandemic has highlighted weaknesses and inequities in the systems that support quality of life and prosperity in our already fragile world.

It has led us and our clients to rethink what's next, reorder priorities and accelerate changes that not only help repair what's broken, but lead to improved, lasting outcomes.

As the world's trusted infrastructure consulting firm and a leader in environmental, social and corporate governance, we are determined and well-positioned to deliver positive, impactful and sustainable legacies for our company, our communities and our planet.

Our Sustainable Legacies ESG strategy is formed around four pillars:



Embedding sustainable development and resilience across our work



Achieving net-zero carbon emissions



Improving social outcomes



Enhancing governance

#2

In Engineering News Record's
2023 top 200 environmental
firms overall

**SUSTAINABILITY
Innovation Awards 2022**

Winner - Green Consultant of the Year
Sustainability Innovation Awards 2022

ScopeX™

ScopeX™ is AECOM's platform to reduce carbon across our planning, design and construction projects.

It considers embodied and operational carbon across the entire lifecycle to reduce carbon impact by at least 50 percent compared to industry norms on major projects.

To decarbonize the built-environment and support our clients to achieve their net zero agendas, we're improving the cities and communities we serve. Whether it's reducing Scope 1, 2 and 3 emissions, or supporting the development of clients' carbon strategy, ScopeX™ considers materials, site locations, logistics and construction methods to reduce and eliminate the impact of projects on the natural environment. We minimize energy use and optimise sources of renewable power to eliminate carbon emissions and meet clients' carbon goals.

The foundation of ScopeX™ is early engagement with clients. By determining what is critical for their project, we then deploy the best design solutions and digital tools to design the optimal solution for carbon reduction, all while tracking our total impact over time.

ScopeX™ includes an evolving digital platform, informed by the ongoing collection and analysis of client and project data to inform the development of future tools, and refinement of our services.

Taken together, we estimate that our ScopeX™ platform can design-out at least 84 million tons of carbon dioxide emissions from the built environment per year.

The iconic Ashton Arch

Abe Newmark
Consultant - Bridges
EMEA, Africa

The iconic Ashton Arch

During the extensive floods of September 2023, that in some instances was deemed to exceed a 1:50 year flood event, resulting in the closure of several major routes in the Western Cape, the recently completed multiple award-winning Ashton Arch presented another testimony to the planning and engineering ingenuity of the project team. This time successfully competing against the forces of nature resulting in a major flood event, the biggest in more than half a century!

Ashton's monstrous bridge over troubled waters has its big moment.

Article in 2OceansVibe News, 27 September 2023
by Heinrich in Lifestyle, Natural Disasters, South Africa, Weather

<https://www.2oceansvibe.com/2023/09/27/ashtons-monstrous-bridge-over-troubled-waters-has-its-big-moment/>

“ Ashton's massive bridge has emerged as a clear winner after massive flooding threw everything, at it. The recent rains and flooding tried their best, but the foundations are solid, and whoever got the tender to build that thing, deserves a case of Ashton's finest wines.”



Ashton Arch Bridge
Western Cape, South Africa

The New Ashton Arch Bridge, crossing the Cogmanskloof river, was completed in 2022 in the town of Ashton, Western Cape, the start of "Route 62", an important tourist destination and national route.

AECOM provided project management and engineering services in this undertaking by the Western Cape Provincial Government.

The new tied-arch bridge comprises a cable-supported concrete deck spanning 110 metres between supports with arching ribs rising 22 metres above the road surface.

The 8,000-ton superstructure, first constructed adjacent to the existing road-alignment, was launched transversely into its final position onto the adjacent newly completed substructure in less than 24 hours, a first in South Africa.

Why?

The objective of this project was the improvement of parts of Trunk Road 31/2, from Ashton to Montagu (start of tourist Route 62) to a higher standard and also address flood capacity problems at several problem locations. This included the Cogmanskloof River crossing in Ashton.

The original earth-filled multiple-arch bridge at this crossing was constructed in 1930 for single-lane traffic and upgraded in 1950 to support two-way traffic.

Key considerations for the upgrade were to minimize flow restriction and improve the available freeboard within the restrictions of adjacent properties and road alignment levels.

Through an economic analysis, the technical options for the river crossing and construction strategy were evaluated with due consideration of the impact of the construction strategy on road user costs.

The design which was finally adopted consisted of a single span (110m) concrete tied arch with a deck suspended by hangers which accommodated four traffic lanes and two walkways.

This largely eliminated the possibility of debris build-up and provided the shallowest deck depth option (key considerations).

How?

Key elements of the structure are:

- Overall height of 23m.
- Twin parallel arch ribs connected via five 15,5m transverse wishbone beams for lateral stability.
- Twin longitudinal, post-tensioned tie-beams complete the tied-arch structural form.

- A post-tensioned coffered deck road slab and cantilevered sidewalks, transfer load to the longitudinal tie-beams.
- Each arch has twenty-four hangers (fully locked coil strand cable with adjustable fork sockets) connecting the arch rib and tie-beam with welded composite metal anchor plates and stress bars.

Concrete mix properties were specially designed and verified by extensive testing, favouring structural and thermal performance properties, as well as durable and sustainability parameters.

The construction methodology of large-volume concrete elements was planned with due care and management of thermal performance aspects.

To minimize traffic disruption, a key design consideration, the new bridge was constructed adjacent to the existing bridge whilst maintaining traffic over it. After completion, the new bridge was then used as a temporary bypass/river crossing while the existing bridge was demolished, and new abutments built.

The new bridge was finally launched transversely into its final position in less than 12 hours under widespread publicity which included live streaming of the event.

Why are we proud of this achievement?

Structural form and bridge aesthetics received meticulous attention during the conceptual design with due consideration of the following:

- The existing multiple-span arch bridge inspired the structural form combined with the major benefit of the arch's ability to span over the entire river.
- A tied arch design is appropriate for this location due to the visually appealing light deck which also assists in the hydraulic clearance.
- Slender members display a transparency accentuated by the surrounding mountains.
- The tied-arch form expresses a visualisation of the flowing of forces with light hangers in a V configuration.

Many design, procurement and construction challenges were addressed over several years.

State-of-the-art software was used for the design, construction stage analysis and in-service analysis, a joint effort by AECOM's SA and UK long-span complex bridge teams.

Software models were updated with actual concrete material parameters. This allowed an accurate simulation of the time-dependent material behaviour with the stay cable

force adjustments in several stages of construction. Such modelling is important for bridges of this nature to ensure effective behaviour and force distribution of all elements.

There were four tensioning phases, with the initial tensioning of the bridge structure taking place over six months. Following this process, it was remodelled and tensioned again to ensure the concrete stayed in an uncracked condition for the design service life.

Modern state-of-the-art structural components were designed, manufactured, and installed using complex methodology. These included the post-tensioned tie-beams, stay anchors and cables as well as the transverse launching equipment which had to be specially imported.

Using a transverse launching method of a completed concrete tied-arch road bridge was a first in South Africa when more than 8,000 tons of concrete and steel were moved over 24m in less than 12 hours.

On completion of the project, a total of 18% of the contract value was allocated to the creation of economic opportunities and entrepreneurial capacity in the surrounding areas.

The New Ashton Arch, South Africa's first transversely launched concrete tied-arch bridge, received several awards including the prestigious 2022 CSSA Fulton Award for Best Infrastructure Project greater than R100 million. The judges praised the New Ashton Arch for its "unique bridge engineering technique."



“

There are usually at least a few challenges in any project, especially in large and complex projects such as this one. We did not know when the project began that the challenges would be of such a nature there would be significant delays and we would need to appoint new contractors.”

Jacqui Gooch, Transport and Public Works Head of Department

“

Ingenuity, innovation, and the high-quality workmanship of the South African concrete industry were distinctive features of all 24 entries in the 2022 Fulton Awards.”

Bryan Perrie, CCSA CEO

Ashton Arch Bridge
Western Cape, South Africa



**GREEN STAR
SOUTH AFRICA**

Employees across our South African business have completed the 'Green Star South Africa' accredited professional course.

Our people are well-versed in sustainable construction and are available to help clients achieve their environmental responsibilities, as well as their financial objectives in terms of infrastructure and building development.

Green building ratings that are currently undertaken by our team of sustainability consultants include Green Star Office, Green Star Interiors, Green Star Existing Building Performance, LEED Design and Construction and LEED Interior ratings.

The Green School
Paarl, Western Cape



Image courtesy of GASS Architects

Innovation

Digital Project Delivery (DPD)

AECOM promotes a collaborative working environment underpinned by digital technologies. Our focus is on implementing more efficient methods to design, procure, construct, operate and maintain built assets and infrastructure.

Our cost managers and consultants are fully aligned to standard DPD protocols and procedures. This ensures consistency and successful outcomes in our daily working practices. Our teams are committed to the development of 5D BIM through a collaborative workflow that aims to improve BIM data quality and facilitate improved digital outcomes.

These include the ongoing development of the following:

- Design/measurement coordination
- Risk/change management
- E-tendering
- Global collaborative tools
- Construction progress reporting
- 5D BIM Implementation
- Mobile connectivity to monitor site progress
- Paperless communications and reporting

OUR DIGITAL
TRANSFORMATION

02

Digital AECOM

Digital AECOM brings together the potential of AECOM's digital technologies to deliver a better world.

Working across the program and project lifecycle, Digital AECOM combines our leading industry knowledge with digital consulting services and products to define, develop and implement personalized – and even disruptive – solutions that accelerate our clients' digital journey and achieve better outcomes

We exist within AECOM's sphere of innovation, and expanding ecosystem of tools, systems and processes – with a team of over 2,000 digital practitioners who understand both the urgency of the challenges facing the infrastructure industry and our responsibility to respond in an impactful and enduring way.

As one of our core values, innovation drives our embrace and development of digital technologies.

From **PlanEngage**, our online platform that streamlines the planning stakeholder engagement process, to **PipeInsights**, our Artificial Intelligence (AI)/Machine Learning (ML) platform that improves the speed and accuracy of pipe inspections, we have developed user-friendly software-as-a-service (SaaS) products that provide greater connectivity between data, projects and communities.

We constantly invest in our digital capabilities to deliver faster, smarter and better. Working with agile specialists, as well as some of the world's largest software providers, our extensive technology alliances allow us to select the right options to meet our clients' needs.

Budgets and timescales involved in infrastructure projects mean few can

afford to gamble when it comes to digital adoption. Achieving net zero carbon targets and circular economy ambitions add further impetus and complexity.

As digital experts and trusted advisers to the architecture, engineering and construction industries, Digital AECOM is the bridge between the digital and infrastructure worlds, equipped to create a more sustainable and equitable future, and to deliver a better world.

To learn more about Digital AECOM please visit: <https://aecom.com/about-us/innovation-digital/>

Spotlight on solutions

Selected digital solutions we've developed to solve today's pressing challenges:

Digital Twin – there's never been a better time for asset owners to adopt digital twins to unlock significant value, provide benefits for themselves and their customers, and safeguard their staff.

SWIFT (Sustainable Ways of Integrating Future Transportation) – examines future scenarios for regional development considering transportation's role in sustainable development patterns and the role of emerging transportation technologies, such as automated vehicles and Mobility as a Service (MaaS).

OCEAN (Operational Carbon & Energy Analysis) – gathers data for holders of large asset portfolios to understand their portfolio level performance and compare building performance against industry norms.

Transforming project delivery

Our clients count on us to think without limits. By harnessing the power of digital technology and innovation, and connecting our technical experts and visionaries around the world, we deliver tailored solutions and transformative outcomes for our clients and the communities they serve.

Using a bespoke AECOM-developed Reality Capture tool, comprising a mobile phone, 360-degree camera and cloud application, we're able to take 360-degree images of projects that are automatically uploaded and stored on a secure cloud server quickly and easily, visually documenting construction-site progress throughout a project's lifecycle.

The tool allows us to document site progress faster, with stakeholders able to view and assess the information at any time and from anywhere. The images can be easily retrieved as the application logs their location and capture times, which is in stark contrast to traditional photograph repositories that either rely on extensive tagging or renaming.

The 360-degree images provide a more ubiquitous view of projects, which would traditionally involve taking dozens of photographs at multiple locations.

- Project stakeholders to assess site progress remotely anytime and from anywhere by taking a virtual walkthrough.
- Dedicated microsite for stakeholder access to an immersive virtual site walkthrough.
- Visually documenting construction site progress through the use of 360-degree images.
- Promoting transparency across projects and enhancing trust.
- Quicker documentation of site progress.
- All information is stored on one platform, in one place.
- Health and safety concerns can be picked up and shared with the SH&E team.
- Efficient claims handling due to the ability to view an archive of project images tagged with the same GIS data.

Building Information Modelling

The 5D BIM process

For the cost management team, our focus is on 5D BIM. This refers to the linking of cost information to a 3D model. The number “3, 4 or 5”, in connection with BIM, relates to the type of information associated with the model. It refers to other dimensions, such as time (4D) or cost (5D). 2D and 3D essentially refer to CAD 2D plans and 3D models, while 5D BIM entails the intelligent linking of individual 3D CAD components to cost-related information.

The possible benefits of BIM from a cost management perspective:

Fast, reliable and accurate quantity take-off and cost estimation.

Auto computation of calculations, hence reduced calculation mistakes.

Categorised cost reporting and estimation via the use of zones/locations.

Improved visualisation of the elements for measurement and costing purposes.

Enhanced communication and collaboration amongst the professional and project team.

Our PCC team have developed a thorough leadership document that is an essential guide for quantity surveyors, cost managers and cost estimators looking to be involved in a project utilising BIM.

The document further acts as guidance notes to the design team about modelling best practices and requirements for the quantity surveyor to be able to rely on the object data within the 3D model. The document makes recommendations based on 5D-friendly modelling practices to standardise the output of 3D models in a format that is 5D compatible.

By applying the guidance within the document, the need for manual take-off will be greatly reduced. The ultimate goal is that the development of consistent modelling best practices improves the quality and usability of model data.

“The ultimate goal is that the development of consistent modelling best practice improves the quality and usability of model data.”



Research support

Research is a key part of AECOM's aspirations to embrace complex challenges and deliver innovative outcomes.

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 deliver cost-effective, high-quality and relevant services.

We also undertake contract research on assignment for clients.

Globally, we have 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.

Current research, nationally and internationally, centres around:

- Local, regional and international influences on construction costs and prices.
- BIM cost models.
- 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 and life-cycle costing.

We have an ongoing collaboration with our international offices with specific regard to global infrastructure sentiment surveys, sector-specific research and developing global project-cost databases.

Finally, we aim to work closely with the industry on continuing educational workshops and developing relevant industry reports and publications.

OUR SERVICES

03

Our services

Quantity surveying and cost management

AECOM provides comprehensive cost management services through all six stages of a project cycle, as identified by The South African Council for the Quantity Surveying Profession, Tariff of Professional Fees, Quantity Surveying Profession Act 2000 (Act 49 of 2000), which is summarised as follows:

Stage one

- 
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 two

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 three



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.



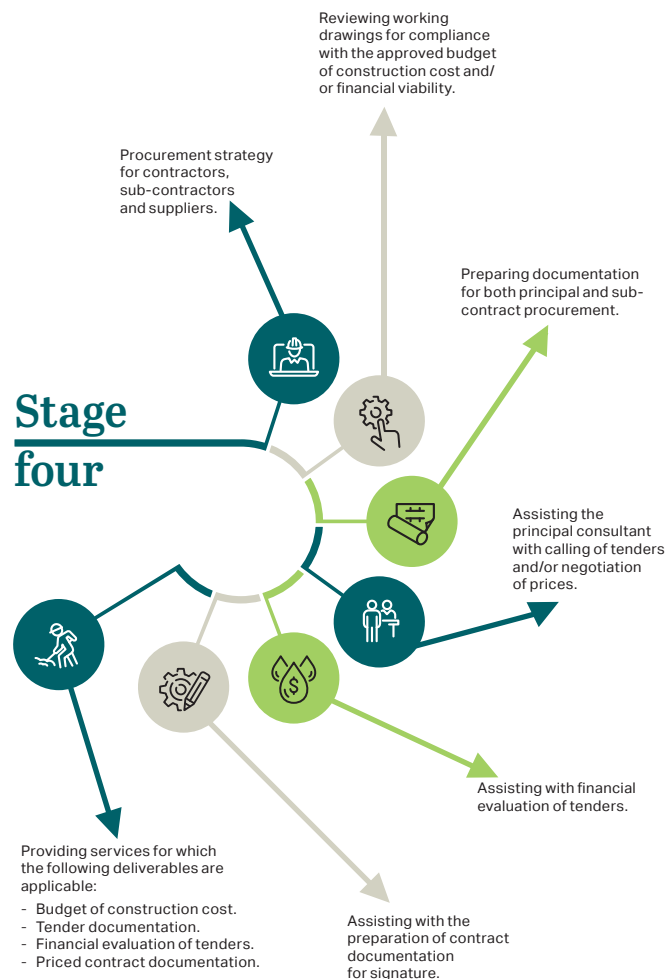
Commenting on space and accommodation allowances and preparing an area schedule.

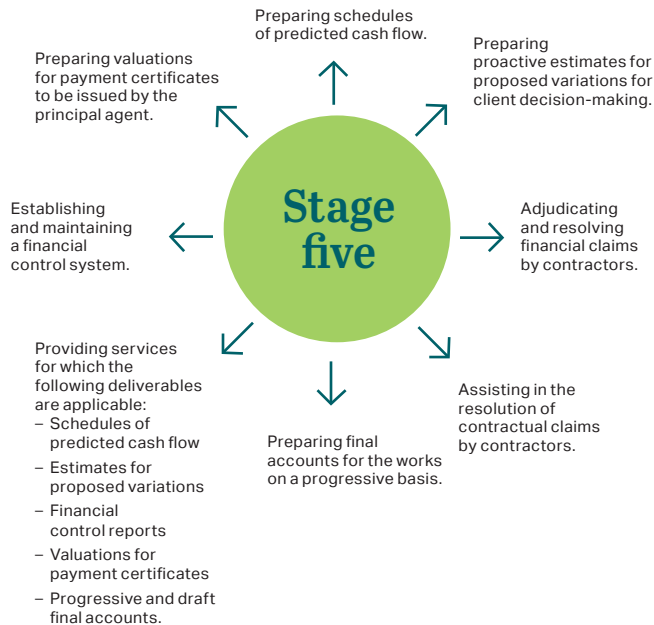


Providing services for which the following deliverables are applicable:

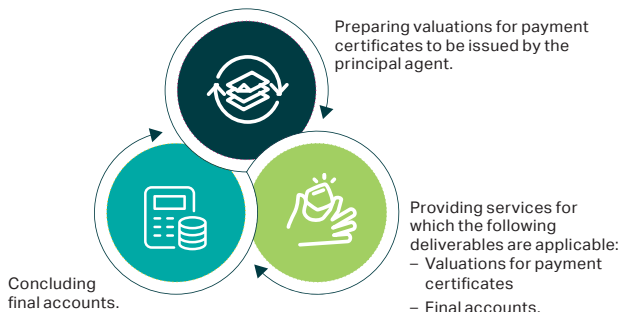
- Detailed estimates of construction cost.
- Area schedule.

Stage four





Stage six



Engineering cost management

Engineering cost management operates as a specialist service within AECOM. It comprises specialist skills and applications that enhance risk and value management techniques required by the mining, infrastructure, minerals, metallurgical and petrochemical sectors.

Our engineering cost management group includes dedicated independent teams specialising in, and responsible for the estimation, procurement, cost management and contract administration activities relating to the above-mentioned sectors.

The engineering cost management team operates throughout Africa using infrastructure support from our major local offices.

Our group employs professionally qualified quantity surveyors, cost managers, cost engineers and contract administrators. Mining, infrastructure, minerals, metallurgical and petrochemical projects are generally of a high monetary value. It therefore is most beneficial to involve the mining and engineering cost management team at an early stage in the project cycle.

Imposing robust financial discipline from a very early stage will positively impact a project. This includes accurate and structured estimating, timely and cost-effective procurement, accurate and up-to-date maintenance of costs to completion, the cost management of design changes and the prompt close-out of contracts. The implementation of these financial management principles will thereby deliver maximum shareholder value, as well as significantly influence project outcomes to benefit all stakeholders.

Our engineering cost management group provides much experience, expertise and independence that contributes to and complements 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, formalising project principles is equally critical throughout the project, with cost management continuing through to the post-contract period and final closeout.

Project controls and support services

Areas of expertise:

- Scope and change management.
- Resource and material management.
- Project cost controls and budgeting.
- Performance and earned value.

Project success is most often measured in terms of cost, schedule and budget. An effective Project Manager will oversee these vital elements through 'control'.

Timely and accurate project information empowers the decision making process, ensuring access to the right tools and skills for planning, tracking and reporting project information. AECOM provides project controls and support services with a 'project controls by design' approach.

This concept provides a powerful, cost efficient service that satisfies the unique management and reporting needs of each individual project. Our project controls specialists deliver reliable and accurate information, allowing flexibility and scalability, based on project complexity and needs.



Scope management

AECOM utilises software platforms to apply critical path management techniques to capture and organize the fundamental elements of work scope, task durations, logic ties among tasks, and key milestones.



Resource and material management

By using resource-loaded schedules and activity sequencing to facilitate contractor involvement, this minimizes work conflicts and ensures that resources, equipment, and materials are available and appropriately staged for maximum project efficiency.

Project cost controls and budgeting

AECOM uses cost-loaded schedules to integrate multiple project cost estimates and resource data to establish a budget, integrated baseline plan, and cost analysis process. This approach transforms static cost data into accurate 'time-phased' spending plans, budgets, cost forecasts, and specialty reports designed to facilitate a realistic project execution plan.

Performance and earned value measurement

AECOM establishes and facilitates a project delivery process that collects and compares actual project costs against the integrated baseline plan to obtain an objective measure of project scope, schedule, and budget performance to date using earned value methods.

Building services cost management

It's essential.

Building services, such as electrical, air-conditioning, fire protection and electronic installations, typically make up 25 to 40 percent of the total construction cost, meaning effective cost management of the building services is essential to ensure the client's budget expectations are met.

The quantity surveyor, with the necessary expertise, is best placed to ensure that the Building Services are cost-managed in the same way as the rest of the building works and that the cost management responsibility for the entire project remains with one dedicated consultant – rather than being spread among the various building services design consultants.

Independent cost management of building services by the quantity surveyor ensures transparency and focused service, which in turn allows the building services consultants to focus on their primary design responsibility.

“

The most effective way to ensure that the building services are cost managed in the same way as the rest of the building works is to allocate this responsibility to the quantity surveyor.”

Our expertise

The team provide financial management and contract administration of all building services including:

- Electrical installation.
- Heating, ventilating and air-conditioning (HVAC) installations.
- Fire protection systems (sprinklers).
- Fire detection and evacuation systems.
- Electronic systems such as access control, surveillance, and structured cabling.
- Lifts and escalators.

Our services

Working in close conjunction with mechanical, electrical and fire protection consultants, our team provides a comprehensive service that covers all aspects of procurement and cost management throughout all the project stages including:

- Cost planning.
- Cost studies to compare alternative designs.
- Evaluating the design as it evolves to ensure compatibility with the cost plan.
- Procurement from tender documentation to adjudication.
- Cost management, monitoring and reporting throughout the contract.
- Valuation for progress payments.
- Settling final costs with the contractor.

**Department of Agriculture,
Land Reform and Rural Development**
Pretoria, South Africa



Image courtesy of
Boogertman + Partners



ARTICLE 2

Student units on Cape Station

Pascalina Makwela

Marketing and brand management

Eris Property Group

The rise of units on Cape Station in the heart of the bustling Cape Town Central Business District (CBD).

The recently developed 3,071-bed Units on Cape Station student accommodation building is strategically located at the forecourt of Cape Town's main Train Station, just a few steps away from Adderley Street. It has been built to cater to the growing needs of the academic community in the Central Business District (CBD).

This initiative was not born out of mere ambition, but was a calculated response to a pressing market demand for affordable Purpose-Built Student Accommodation. Extensive market research conducted before the project's inception revealed a significant shortfall in quality, affordable and sustainable student accommodation within the CBD. This gap was not just in quantity but also in the standard of available housing. Many students faced the dual challenge of high rental costs and subpar living conditions, which could adversely affect their academic performance and overall well-being.

Recognizing this critical need, South African Student Accommodation Impact Investments (SASAI), an investment fund managed

by Eris Property Group, joined forces with Passenger Rail Agency of South Africa (PRASA) after they saw an opportunity to provide an investment solution that would enhance the quality of student life in the CBD.

The green building, Edge-rated, Units on Cape Station is more than just a place for students to rest their heads; it offers laundry facilities, lounge areas for socializing, designated quiet spaces for focused study sessions, an indoor gym, a yoga room, and two soccer/netball/basketball courts for staying active. Students can enjoy movie nights at the dedicated cinema or unwind in one of the numerous TV lounges scattered throughout the building.

The one, three, and four-bedroom apartments are furnished with built-in cupboards, a study desk and chair, and a bed. Each unit is equipped with a kitchen, including fridges, stoves, and a microwave, embodying a move-in ready concept.

On the ground floor, there is a retail centre offering everything the students need right at their doorstep, including tenants such as SPAR, Clicks and Adidas,

as well as a plethora of fast-food restaurants.

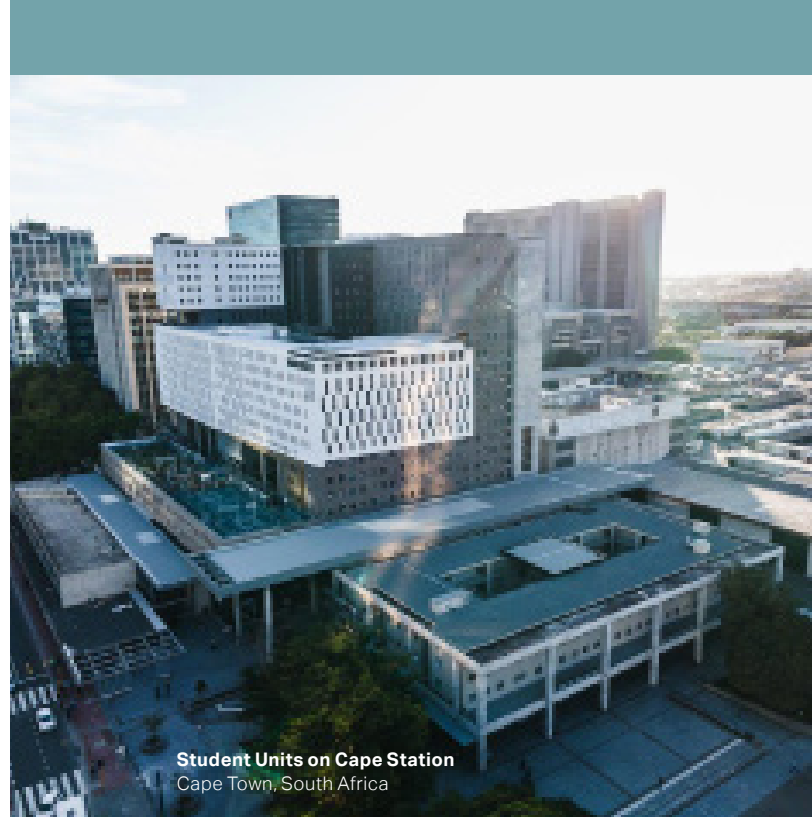
Positioned at Cape Town's major public transport interchange, students have access to trains, buses, and taxis, ensuring a hassle-free commute to wherever their day takes them.

The success of this project can be largely attributed to the meticulous market research performed at the outset and understanding of the exact needs and preferences of the student demographics. Eris Property Group tailored the accommodation to meet the students' prerequisites for affordable yet high-quality housing, setting the foundation for a project that directly addressed these needs.

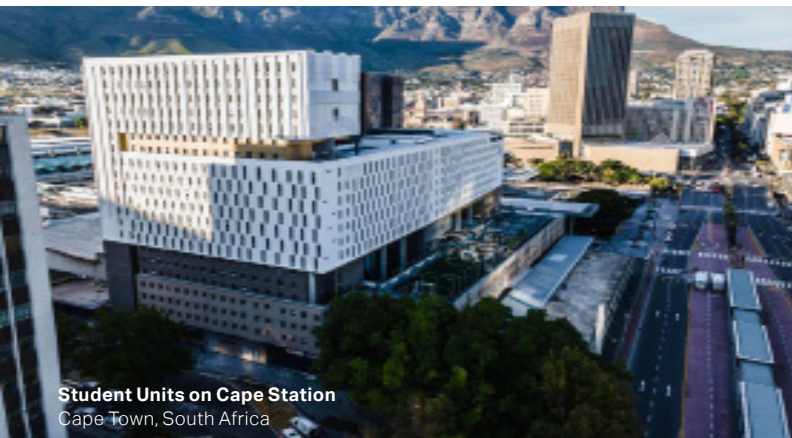
In addition to market insights, the appointment of AECOM played a crucial role in the project's financial

success. Managing to keep costs within a tight budget requires expertise and precision. AECOM's ability to foresee potential financial pitfalls and implement cost-saving measures ensured that the project remained economically feasible without compromising quality.

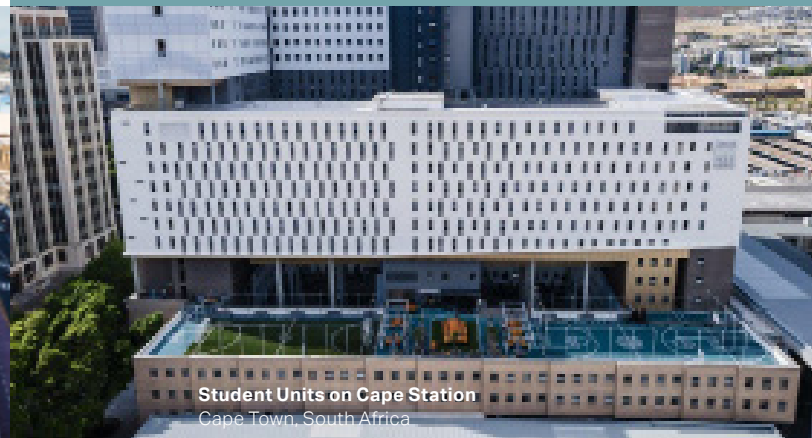
Units on Cape Station is an ultimate home away from home, where modern living meets convenience, standing as a testament to what can be achieved with careful planning, thorough market research, and effective cost management. By addressing a critical gap in the market and ensuring compliance with regulatory and sustainability requirements, the development not only meets the immediate needs of Cape Town students, but also sets a benchmark for future projects.



Student Units on Cape Station
Cape Town, South Africa



Student Units on Cape Station
Cape Town, South Africa



Student Units on Cape Station
Cape Town, South Africa

South African cost data

Building cost rate influences – inherent difficulties and pitfalls

This section highlights the inherent difficulties and pitfalls that may occur 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 metre (m^2) of construction area or rate per unit in number

The most widely used and quick method to obtain an indication of the construction cost of a building is the rate/ m^2 -on-plan method. This 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 and without taking care when calculating the construction area and selecting the rate.

Cost comparisons of various buildings are often made by comparing the individual rates/ m^2 without due consideration of several factors that can affect the rate/ m^2 to a substantial degree.

Very often the cost of a building is expressed in rate/ m^2 and the unit cost is ignored if calculated at all. This rate/ m^2 is then used as the sole yardstick for 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 R9,000/ m^2 . This rate, when compared with the rate for a 200 m^2 house containing plumbing, carpets, etc., at R7,000/ m^2 would seem very expensive. However, the unit cost of the shelter is R36,000, compared with R1.4 million for the house.

Below are some criteria to be considered when determining rates/ m^2 .

SOUTH AFRICAN
COST DATA

04

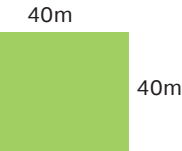
Specification

Two buildings of the same shape with identical accommodation can have vastly different rates/m², as one building may have finishes of a different standard. For example, expensive carpets in lieu of vinyl floor tiles can increase the rate by R150/m².

Wall-to-floor ratio — plan shape

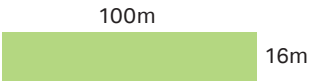
The most economical shape for a building is square. This shape requires the minimum wall length to enclose a given floor area. For example:

Case A



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

Case B



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

The rate/m² on-plan of a façade costing R800/m² on elevation in each case is:

Case A R800 x 30.0% = R240/m²

Case B R800 x 43.5% = R348/m²

A reader with a good knowledge of mathematics will fault the above argument correctly by stating that a circle is a geometric shape requiring the minimum wall length to enclose a given floor area. However, in very few cases, this is the most economical plan shape of a building as, due to various reasons, the cost of constructing a circular, as opposed to a straight external envelope, is generally greater than the savings in terms of the quantities required by the envelope.

Floor-to-ceiling heights

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

Plumbing, mechanical and 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 square metre is much greater than that of a house containing one bathroom as the high cost of the bathroom area is spread over the less expensive remaining areas of the house.

Similarly, in commercial and industrial buildings the rate/m² will depend greatly on which air-conditioning, security systems, sprinklers, smoke-detection systems, electrical installations, acoustic treatment or other specialised installations are incorporated into the design.

Construction areas

The rate/m² for a building with large balconies or access corridors included in the construction area cannot be compared with the rate/m² for a building without similar low cost areas.

Internal subdivisions

The rate/m² for open-plan offices should not be compared directly with the rate/m² for offices with internal partitions without the relevant adjustments being made. The inclusion of partitions can increase the overall rate/m² by up to R300/m² of office area.

Parking

Should the building contain parking areas, the average rate/m² will be less than that of a building with identical accommodation, but with parking outside the building structure. For example:

Case A

Building with parking in 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 @ R15,000	= R 36,000,000
Parking	600m ² @ R6,000	= R 3,600,000
Total		R 39,600,000
Average rate/m ²		R 13,200

Case B

A building with parking outside of the building area 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 @ R15,000	= R 36,000,000
Parking	600m ² @ R 800	= R 480,000
Total		R 36,480,000
Average rate/m ²		R 15,200

Under Case B, the parking area is not included as part of the construction area for calculating the rate/m². Similarly, the rate/m² for a supermarket or shopping centre should be qualified as to whether the cost of on-site parking and ancillary site development has been included, a cost which could be in the region of R800/m² of construction area.

There are further points that need to be taken into consideration. Amongst these are site works particular to each contract, the number of storeys, floor loadings, column spans, concentration of joinery and other fittings, overall height of the building, open-atrium upper volumes, etc.

In conclusion, rates/m² must be used with circumspection. The degree of accuracy of the answers provided must be in direct proportion to the 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 current to 1 July 2024 and, therefore, represent the average expected building cost rates for 2024. It must be emphasised that these rates are indicative only, and should be used circumspectly, as they are dependent upon several assumptions. See inclusive rate estimates herein.

The area of the building expressed in square metres is equivalent to the construction area where appropriate, as defined in Method for Measuring Floor Areas in Buildings, Second Edition (effective from 7 November 2007), published by the South African Property Owners' Association (SAPOA).

“

It must be emphasised that these rates are indicative only, and should be used circumspectly, as they are dependent upon a number of assumptions.”

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 areas, for example, are generally significantly higher than in Gauteng due to the demand for this type of accommodation. However, these rates are based on data received from Gauteng, where possible. Be mindful 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 provided upon request by any AECOM office in that region.

Sol Plaatje University
South Africa



Building rates

Rates include the cost of appropriate building services, for example, air-conditioning, 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 10,700 – R 13,100
Low-rise prestigious office park development	R 13,800 – R 20,500
High-rise tower block with standard specification	R 15,500 – R 20,500
High-rise prestigious tower block	R 20,500 – R 25,900

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

Parking	Rate per m ² (excl. VAT)
Parking on grade, including integral landscaping	R 750 – R 950
Structured parking	R 5,200 – R 5,800
Parking in semi-basement	R 5,800 – R 7,800
Parking in basement	R 6,100 – R 10,700

Retail	Rate per m ² (excl. VAT)
Local convenience centres (Not exceeding 5,000m ²)	R 10,500 – R 13,800
Neighbourhood centres (5,000 – 12,000m ²)	R 11,500 – R 15,200
Community centres (12,000 – 25,000m ²)	R 12,600 – R 16,100
Minor regional centres (25,000 – 50,000m ²)	R 13,300 – R 17,100
Regional centres (50,000 – 100,000m ²)	R 14,100 – R 17,100
Super regional centres (exceeding 100,000m ²)	R 15,500 – R 20,000

Super regional centres and regional centres are generally inward trading with internal malls, whereas convenience, 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 m ² (excl. VAT)
Industrial warehouses, including office and change facilities within structure area (architect/engineer designed):	
Steel frame, steel cladding and roof sheeting (light-duty)	R 5,400 – R 6,900
Steel frame, brickwork to ceiling, steel cladding above and roof sheeting (heavy-duty)	R 6,100 – R 8,800
Administration offices, ablution and change room block	R 9,900 – R 12,700
Cold storage facilities	R 18,500 – R 26,300

Residential	Rate per site (excl. VAT)
Site services to low-cost housing stand (250–350m ²)	R 67,000 – R 107,000

	Rate per m ² (excl. VAT)
RDP housing	R 3,200 – R 3,400
Low-cost housing	R 4,000 – R 7,000
Simple low-rise apartment block	R 9,800 – R 13,500
Duplex townhouse – economic	R 9,800 – R 13,900
Prestige apartment block	R 19,000 – R 28,000



Residential		Rate per m ² (excl. VAT)
Private dwelling houses:		
Economic		R 7,400
Standard		R 9,300
Middle-class		R 11,200
Luxury		R 15,600
Exclusive		R 25,000
Exceptional ('super luxury')		R 37,000 – R 75,000
Out buildings	– standard	R 6,900
	– luxury	R 9,800

Rate per no. (excl. VAT)		
Carport (shaded)	– single	R 6,000
	– double	R 12,100
Carport (covered)	– single	R 9,400
	– double	R 18,400
Swimming pool		
Not exceeding 50 kl		R 127,000
Exceeding 50 kl and not exceeding 100 kl		R 225,000
Tennis court		
Standard		R 670,000
Floodlit		R 830,000

Student residential		Rate per m ² (excl. VAT)
High rise tower block with standard specification		R 15,100 – R 16,600

Student residential rates include allowances for furniture, fittings and equipment (FF&E).

Hotels		Rate per key (excl. VAT)
Budget		R 840,000 – R 1,339,999
Mid-scale (3-star)		R 1,340,000 – R 2,009,999
Upper-scale (4-star)		R 2,010,000 – R 2,849,999
Luxury (5-star)		R 2,850,000 – R 3,800,000

Hotel rates include allowances for furniture, fittings and equipment (FF&E).

Studios		Rate per m ² (excl. VAT)
Studios — dancing, art exhibitions, etc.		R 18,500 – R 26,000

Conference centres		Rate per m ² (excl. VAT)
Conference centre to international standards		R 34,000 – R 43,000

Retirement centres		Rate per m ² (excl. VAT)
Dwelling houses		
Middle-class		R 11,000
Luxury		R 15,500

Apartment block		
Middle-class		R 11,300
Luxury		R 17,600

Community centre		
Middle-class		R 14,900
Luxury		R 21,700

Frail care		R 17,600
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Schools		Rate per m ² (excl. VAT)
Primary school		R 8,800 – R 10,100
Secondary school		R 10,500 – R 11,200

Hospitals		Rate per m ² (excl. VAT)
District hospital		R 37,000

Hospital rates exclude allowances for furniture, fittings and equipment (FF&E).

Stadiums		Rate per seat (excl. VAT)
Stadium to PSL standards		R 45,000 – R 70,000
Stadium to FIFA standards		R 105,000 – R 138,000
Rate per pitch (excl. VAT)		
Stadium pitch to FIFA standards		R 30,000,000 – R 35,000,000



Prison	Rate per inmate (excl. VAT)
1,000 inmate prison	R 783,000 – R 832,000
500 inmate prison	R 807,000 – R 932,000
High/maximum security prison	R 1,245,000 – R 1,645,000

Infrastructure airport development costs

Rates exclude any future escalation, loss of interest, professional fees, VAT and ACSA direct costs.

Apron stands (incl. associated infrastructure)	Rate per m ² (excl. VAT)
Code F Stand (85m long x 80m wide = 6,800m ²)	R 7,400
Code E Stand (80m long x 65m wide = 5,200m ²)	R 7,800
Code C Stand (56m long x 40m wide = 2,240m ²)	R 9,900

Taxi lanes (incl. associated infrastructure)	Rate per m (excl. VAT)
Code F taxi lane (101m wide)	R 247,000
Code E taxi lane (85m wide)	R 207,000
Code C taxi lane (49m wide)	R 123,000

Service roads	Rate per m (excl. VAT)
Service road (10m wide)	R 24,700
Dual carriage service road (15m wide)	R 31,000

Taxi ways (incl. associated infrastructure)	Rate per m (excl. VAT)
Code F taxi way (70m wide)	R 184,000

Runways (incl. associated infrastructure)	Rate per m (excl. VAT)
Code F runway (3,885m long x 60m wide = 233,100m ²)	R 414,000

Parking (excluding bulk earthworks)	Rate per bay (excl. VAT)
Structured parking	R 253,000
Basement parking	R 379,000

Perimeter fencing/security gates	Rate per m (excl. VAT)
Perimeter walls with perimeter intrusion detection (PIDS)	R 11,500

Terminal buildings	Rate per m ² (excl. VAT)
Terminal buildings (excl. baggage and X-ray systems, air bridges, seating and aircraft docking systems)	R 40,200

	Rate per unit (excl. VAT)
Telescopic air bridges	R 15,225,000
Aircraft docking system	R 2,195,000

Building services

The following rates are for building services (mechanical and electrical), which are 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 significantly depending on the orientation, shading, extent and type of glazing, external wall and roof construction.

Electrical installation	Rate per m² (excl. VAT)
Offices	
Standard installation	R 1,000 – R 1,500
Sophisticated installation	R 1,500 – R 1,900
UPS, substations, standby generators to office buildings	R 700 – R 900
Residential	R 900 – R 1,500
Shopping centres	R 1,500 – R 1,900
Hotels	R 1,600 – R2,150
Hospitals	R 2,100 – R 3,100

Electronic installation	Rate per m² (excl. VAT)
Offices	
Standard installation	R 500 – R 700
Sophisticated installation	R 700 – R 1000
Residential	R 450 – R 700
Shopping centres	R 950 – R 1,300
Hotels	R 900 – R 1,300
Hospitals	R 950 – R 1,400

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

Fire protection installation (offices)	Rate per m² (excl. VAT)
Sprinkler system, including hydrants and hose reels (excluding void sprinklers)	R 450 – R 550

Air-conditioning installation	Rate per m² (excl. VAT)
Ventilation to parking/service areas	R 450 – R 700

Offices	
Console units	R 1,150 – R 1,600
Console/split units	R 1,300 – R 2,050
Package units	R 1,900 – R 2,800
Central plant	R 2,300 – R 3,600

Residential—split units	R 1,300 – R 2,050
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Shopping centres	
Split units	R 1,500 – R 2,150
Package units	R 1,900 – R 2,800
Evaporative cooling	R 1,200 – R 1,800

Hotels — public areas	R 2,300 – R 3,600
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Hospitals central plant	R 3,000 – R 4,800
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Hotels	Rate per key (excl. VAT)
Console units	R 29,000 – R 39,500
Split units	R 39,500 – R 60,500
Central plant	R 79,000 – R 118,000

Hospitals — operating theatres	R 860,000 – R 1,450,000
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GLOBAL SENTIMENT AND BUILDING COSTS

05

Global sentiment and building costs

Africa outlook 2024

In recent years, Africa's economies have generally remained resilient. Sound macroeconomic policies have enabled the continent to maintain its expected growth.

The effect of coronavirus, however, slowed down the economy of Sub-Saharan Africa. According to forecasts of the African Development Bank, Africa's economy will rebound. Africa's average projected growth includes a rise to 3.7% in 2024 and 4.3% in 2025. It will exceed the projected global average of 3.2%. Of this figure, 17 African economies are projected to grow by more than 5 percent in 2024.

The fastest growing and most promising economies in Africa in 2024

The African Development Bank predicts that of the top twenty economies projected to experience the fastest growth rates in 2024, nine are African countries. These are Niger, Senegal, Libya, Rwanda, Côte d'Ivoire, Djibouti, Ethiopia, Gambia, and Benin.

The outlook for South Africa in 2024

Altogether, Nedbank forecasts GDP growth of around 0.9% in 2024. This is in line with the bleak outlook from the International Monetary Fund, which slashed its growth outlook for the country to 0.9% in April, down from 1.0% in January and down to half the 1.8% projection back in October 2023.

The economic outlook for South Africa in 2025

In February 2024, South Africa's National Treasury forecast in its budget review of 2024 indicates that GDP growth will reach only 1.3% in 2024 and 1.6% in 2025, a more optimistic projection than the outlook for South Africa by organizations such as the International Monetary Fund (expecting 0.9% in 2024 and 1.3% in 2025).

South Africa as a country, however, has the largest economy in Africa. It has Africa's most industrialized economy. After 30 years of ANC-dominated Rule and recent elections, a Government of National Unity has been introduced by taking hands with the opposition (DA), the IFP and smaller parties. A "New South Africa" has been re-born. The previously named "Rainbow Nation" is determined to improve on all past negative performances. Building, repair, and renovation of neglected infrastructure is a high priority resulting in good news for the built environment.

South Africa tops the list of best Countries to Invest in Sub-Saharan Africa. They are South Africa followed by Nigeria, Kenya, Ghana, and Rwanda.

The biggest issues in Africa today

Africa is highly vulnerable to the impacts of climate change, with rising temperatures, changing rainfall patterns, and extreme weather events affecting various regions, impacting ecosystems and livelihoods, increasing water scarcity, and contributing to desertification.

Africa is important to the world

According to the project named "Our work in Africa," a UNEP - United Nations Environment Programme, the largest reserves of cobalt, diamonds, platinum, and uranium in the world are in Africa. Africa holds 65 per cent of the world's arable land and ten percent of the planet's internal renewable fresh water sources. In most African countries, natural capital accounts for between 30 percent and 50 percent of total wealth.

Africa is booming

There is an ever-growing need to finance infrastructure on the continent. Several countries are now prioritising this after realising the importance of industrialisation, to not only maintain growth in their economies but also to diversify through the exportation of goods and services. This has consequently created jobs that are needed for an increasingly younger population. A developing industrial sector on the continent will require more infrastructure investment, particularly in power, water and transportation services that are already over-stretched.

Over recent years, we have seen several national elections across Africa that have been free and fair, and the transition of leadership has been stable, including the appointment of some of Africa's more high-profile leaders. This has shown the world Africa's willingness to implement good governance and curb corruption at all levels.

The World Bank indicates that Africa is boasting rich natural resources, the world's largest free trade area and a 1.2-billion-person market. The continent has the potential to forge a new development path, harnessing the potential of its resources and people.

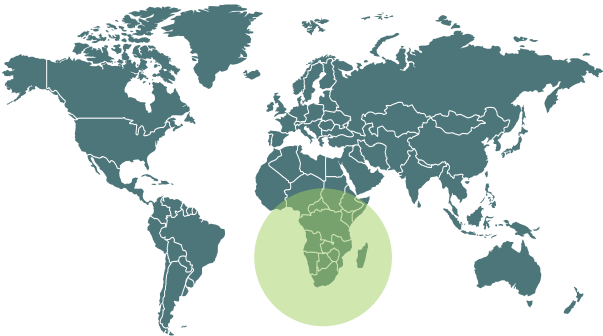
Source:

Various recent forecasts of:

The African Development Bank

The International Monetary Fund

The World Bank



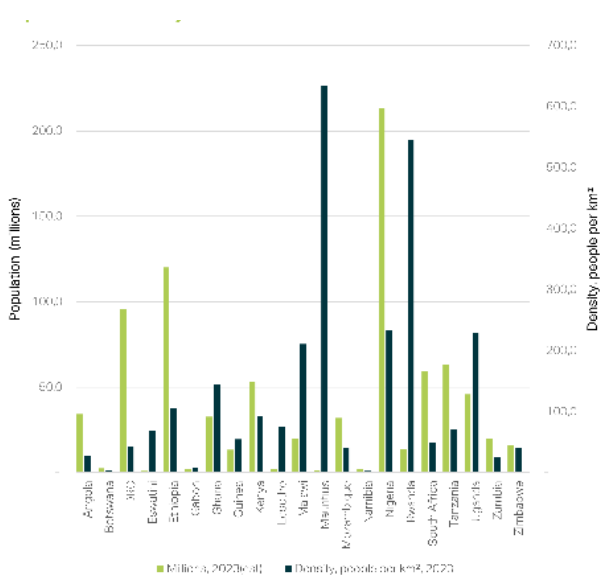
Africa in figures

Area and population

Country	Land area (000km²)	Population		
		Millions, 2023 (est)	Average annual % population growth rate, 2020–2023	Density, people per km², 2023
Angola	1,246.7	34.5	3.2	27.7
Botswana	566.7	2.6	1.6	4.6
DRC	2,267.1	95.9	3.2	42.3
Eswatini	17.2	1.2	1.0	69.3
Ethiopia	1,128.6	120.3	2.6	106.6
Gabon	257.7	2.3	2.1	9.1
Ghana	227.5	32.8	2.0	144.3
Guinea	245.7	13.5	2.4	55.1
Kenya	569.1	53.0	1.9	93.1
Lesotho	30.4	2.3	1.2	75.2
Malawi	94.3	19.9	2.6	211.0
Mauritius	2.0	1.3	-0.3	634.1
Mozambique	786.4	32.1	2.8	40.8
Namibia	823.3	2.5	1.6	3.1
Nigeria	910.0	213.4	2.4	234.3
Rwanda	24.0	13.8	2.3	545.0
South Africa	1,213.0	59.4	0.8	49.0
Tanzania	885.8	63.6	3.0	71.8
Uganda	200.5	45.9	3.0	228.7
Zambia	743.4	20.0	2.8	26.2
Zimbabwe	386.9	16.3	2.0	41.3

Source: World Development Indicators 2023

Population and density 2023



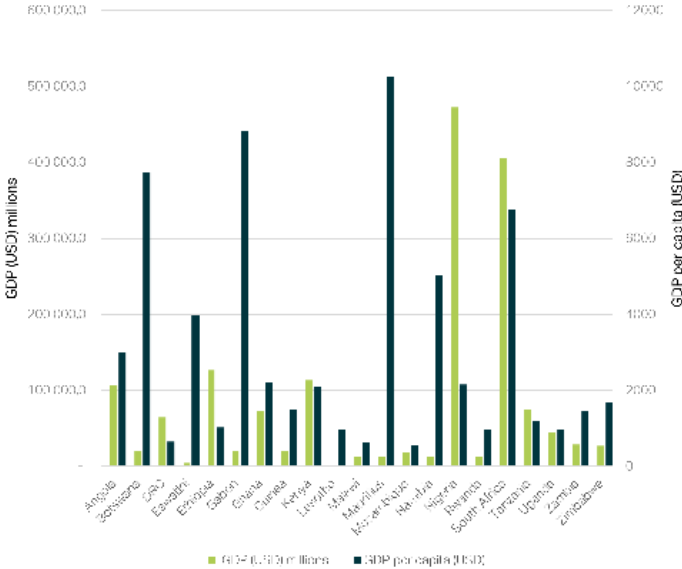
Source: World Development Indicators 2023

Gross Domestic Product (At constant 2,000 prices)

Country	GDP (USD) millions	GDP growth (annual % since 2000)	GDP per capita (USD)	Gross capital formation (% of GDP)	Inflation, consumer price (annual %)
Angola	106,782.7	3.1	3,000.4	25.7	-
Botswana	20,352.3	5.8	7,738.9	25.0	11.7
DRC	64,718.6	8.9	653.7	15.7	-
Eswatini	4,790.9	0.5	3,986.9	11.8	-
Ethiopia	126,783.5	5.3	1,027.6	25.3	33.9
Gabon	21,071.7	2.9	8,820.4	15.6	4.2
Ghana	73,766.1	3.1	2,203.6	16.2	31.3
Guinea	20,999.2	4.7	1,515.2	29.8	10.5
Kenya	113,420.0	4.9	2,099.3	19.2	7.7
Lesotho	2,236.5	1.1	969.9	29.0	8.3
Malawi	13,164.7	0.9	645.2	-	21.0
Mauritius	12,948.7	8.9	10,256.2	19.9	10.8
Mozambique	18,406.8	4.4	558.3	-	10.3
Namibia	12,914.9	7.6	5,031.1	19.4	6.1
Nigeria	472,624.6	3.3	2,162.6	-	18.9
Rwanda	13,311.5	8.2	966.2	25.1	17.7
South Africa	405,270.9	1.9	6,766.5	15.4	7.0
Tanzania	75,732.3	4.6	1,192.8	40.9	4.4
Uganda	45,567.3	4.6	964.4	24.2	7.2
Zambia	29,163.8	5.3	1,456.9	27.0	11.0
Zimbabwe	27,366.6	6.5	1,676.8	14.7	104.7

Source: World Development Indicators 2023

Gross Domestic Product 2023



Source: World Development Indicators 2023

Africa building costs

This section makes provision for the comparison of Africa's building costs, international building costs and international rental rates.

The Africa Building Cost Comparison table (Page 71), summarises the estimated building costs for different types of buildings in various locations in Africa. Rates are based on costs from 1 July 2024 and provide an indicator for the expected building cost rates during 2024. Exchange rates are based on those from 1 May 2024.

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

These are estimated costs and should only 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 the normal standards prevailing in each particular region and must be used circumspectly.

Cape Station
South Africa



Image courtesy of
Boogertman + Partners

Africa Property & Construction Cost Guide Africa Building Cost Comparison

Costs based on 1 July 2024
Exchange rates to US\$ as of 1 May 2024

Building Type	(US\$/m²)	Botswana Gaborone	Ghana Accra	Kenya Nairobi	Lesotho Maseru	Mozambique Maputo	Namibia Windhoek	Nigeria Lagos	Rwanda Kigali	South Africa Johannesburg	Tanzania Dar Es Salaam	Uganda Kampala	Zambia Lusaka
Residential													
Average Multi Unit High Rise		1,007	2,128	796	1,173	1,455	1,173	2,330	1,178	1,020	893	1,002	1,337
Luxury Unit High Rise		1,432	2,510	1,179	1,451	1,860	1,451	3,226	1,571	1,262	1,190	1,604	1,844
Individual Prestige Houses		2,153	2,403	1,448	1,544	2,002	1,544	2,840	1,691	1,343	1,282	1,884	1,806
Commercial/Retail	(US\$/m²)												
Standard Offices High Rise		1,068	1,949	1,073	1,112	1,400	1,112	2,330	1,448	987	1,093	1,420	1,376
Prestige Offices High Rise		1,794	2,866	1,861	1,433	1,674	1,433	3,233	1,829	1,246	1,385	2,404	1,852
Major Shopping Centre		1,494	1,804	901	1,096	1,674	1,096	3,228	1,342	953	1,020	1,187	1,742
Industrial	(US\$/m²)												
Light Duty Factory		947	1,146	777	380	960	380	1,291	1,084	330	819	990	694
Heavy Duty Factory		1,456	1,421	1,233	460	1,455	460	1,739	1,930	400	1,464	1,592	769
Hotel	(US\$/key)												
Mid-scale (3 Star)		152,007	371,264	390,320	103,451	167,294	103,451	319,134	200,102	89,957	155,084	525,620	356,431
Luxury (5 Star)		490,725	521,680	675,555	205,357	301,679	205,357	592,766	478,755	178,571	365,932	922,010	460,146
Resort Style		546,057	662,924	804,232	Not available	598,420	Not available	707,646	640,251	Not available	483,522	1,118,093	483,957
Other	(US\$/m²)												
Multi Storey Car Park		794	929	515	339	933	339	1,666	826	295	654	688	615
District Hospital		Not available	1,857	1,083	2,285	3,319	2,385	2,328	Not available	1,987	Not available	1,590	1,275
Primary & Secondary Schools		1,373	1,201	949	618	1,300	618	Not available	Not available	537	Not available	1,254	893
(As at 1 May 2024)		BWP	GHS	KES	LSL	MZN	NAD	NGN	RWF	ZAR	TZS	UGX	ZMW
US\$/1 =		14.71	13.69	134.99	18.62	63.96	18.62	1,402.36	1,285.73	18.62	2,589.72	3,801.43	26.93

Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT. Hotel rates include FF&E.

Global building cost comparison

The international cost data shown is converted to US Dollars to enable comparison.

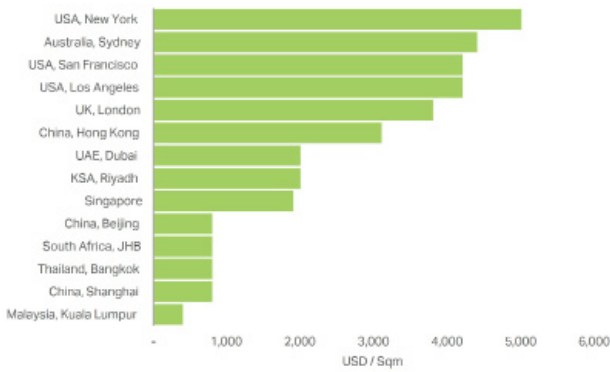
The building costs, for their respective asset types, are averages based on local specifications. The actual cost of a building will depend on, among other things, unique site conditions, design attributes and applicable tariffs.

In addition, the standard for each building varies from region to region, which may have a significant impact on cost.

Costs are subject to considerable variations due to factors such as:

- Local market conditions
- Complexity of project
- Commodity price movements
- Building specifications
- Exchange rates
- Contractors appetite for securing work
- Contractual risk apportionment

Residential Average building cost for a standard residential high-rise



Source: AECOM

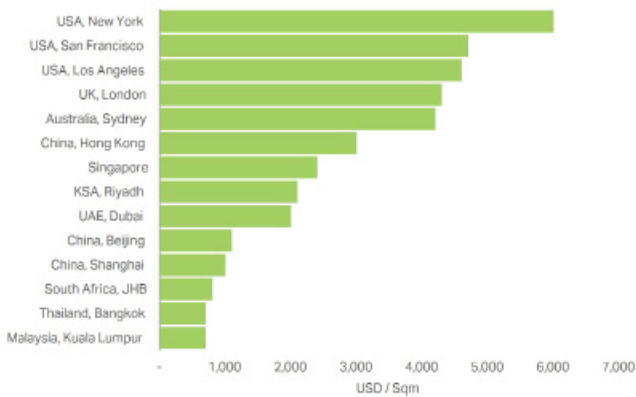
Average building costs (USD/sqm)														
Building type	Sydney Australia	Hong Kong China	Beijing China	Shanghai China	Kuala Lumpur Malaysia	Singapore Singapore	Johannesburg South Africa	Bangkok Thailand	Dubai UAE	Los Angeles USA	San Francisco USA	New York USA	London UK	Riyadh KSA
Average multi-unit high-rise	4,400	3,100	800	800	400	2,000	800	900	2,100	4,200	4,200	5,000	4,200	2,300
Luxury unit high-rise	6,000	4,300	1,500	1,500	800	3,500	1,000	1,300	3,380	5,400	5,300	6,300	5,900	2,800
Individual prestige houses	6,300	5,900	900	900	1,000	3,300	1,100	1,400	3,000	5,100	5,400	5,900	5,800	-
(Ave H1 2023)	AUD	HKD	CNY	CNY	MYR	SGD	ZAR	THB	AED	USD	USD	USD	GBP	SAR
1 USD =	1.51	7.84	7.27	7.27	4.67	1.36	18.94	35.42	3.67	1.00	1.00	1.00	0.79	3.75

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT. International costs based on Q3 2021 and exchange rates to USD as of H1 2023. UAE/KSA costs based on Q3 2023 and exchange rate to USD as of Q3 2023.

Commercial

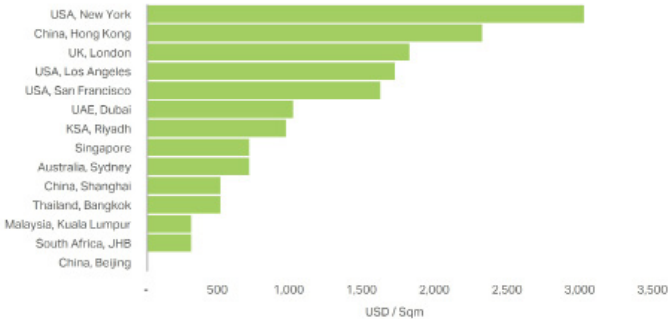
Average building cost for a standard office high-rise



Source: AECOM

Industrial and other

Average building cost for a light duty factory



Source: AECOM

Average building costs (USD/sqm)													
Building type	Sydney Australia	Hong Kong China	Beijing China	Shanghai China	Kuala Lumpur Malaysia	Singapore	Johannesburg South Africa	Bangkok Thailand	Dubai UAE	Los Angeles USA	San Francisco USA	New York USA	London UK
Average standard high-rise	4,200	3,000	1,000	1,000	700	2,500	700	800	2,050	4,600	4,700	6,000	4,700
Prestige offices high-rise	6,000	3,700	1,400	1,600	1,100	3,100	900	900	2,500	5,100	5,000	6,500	5,800
Major shopping centre (CBD)	4,200	4,300	1,300	-	700	3,400	700	800	1,850	3,800	4,000	4,400	5,100
(Ave H1 2023)	AUD	HKD	CNY	CNY	MYR	SGD	ZAR	THB	AED	USD	USD	USD	GBP
1 USD =	1.51	7.84	7.27	7.27	4.67	1.36	18.94	35.42	3.67	1.00	1.00	1.00	0.79

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT. International costs based on Q3 2021 and exchange rates to USD as of H1 2023. UAE/KSA costs based on Q3 2023 and exchange rate to USD as of Q3 2023.

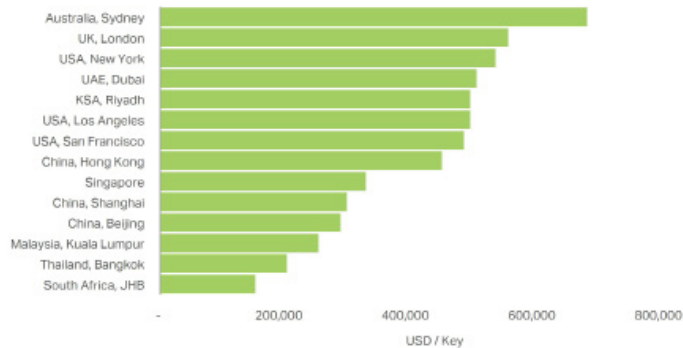
Average building costs (USD/sqm)													
Building type	Sydney Australia	Hong Kong China	Beijing China	Shanghai China	Kuala Lumpur Malaysia	Singapore	Johannesburg South Africa	Bangkok Thailand	Dubai UAE	Los Angeles USA	San Francisco USA	New York USA	London UK
Light duty factory	700	2,300	-	500	300	800	300	500	1,000	1,700	1,600	3,000	1,900
Heavy duty factory	-	-	-	-	500	1,000	300	700	1,600	2,100	2,100	3,900	3,300
Multi-storey car park	1,000	1,600	-	400	300	-	200	500	750	1,700	1,600	1,600	900
District hospital	6,700	5,400	-	1,400	800	-	1,500	-	3,250	7,800	7,500	9,100	4,700
Primary and Secondary schools	2,600	2,600	-	1,000	300	-	400	-	1,900	4,800	4,700	4,900	3,000
(Ave H1 2023)	AUD	HKD	CNY	CNY	MYR	SGD	ZAR	THB	AED	USD	USD	USD	GBP
1 USD =	1.51	7.84	7.27	7.27	4.67	1.36	18.94	35.42	3.67	1.00	1.00	1.00	0.79

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT. International costs based on Q3 2021 and exchange rates to USD as of H1 2023. UAE/KSA costs based on Q3 2023 and exchange rate to USD as of Q3 2023.

Tourism

Average building cost for a five-star luxury hotel



Source: AECOM

Average building costs (USD/sqm)												
Building type	Sydney Australia	Hong Kong China	Beijing China	Shanghai China	Kuala Lumpur Malaysia	Singapore	Johannesburg South Africa	Bangkok Thailand	Dubai UAE	Los Angeles USA	San Francisco USA	New York USA
3-Star budget	345,000	210,000	-	-	135,000	60,000	70,000	55,000	120,000	85,000	85,000	85,000
5-Star luxury	675,000	445,000	275,000	285,000	245,000	340,000	140,000	205,000	550,000	490,000	480,000	530,000
Resort style	-	-	450,000	-	190,000	225,000	-	250,000	670,000	305,000	300,000	370,000
												668,000
(Ave H1 2023)	AUD	HKD	CNY	CNY	MYR	SGD	ZAR	THB	AED	USD	USD	USD
1 USD =	1.51	7.84	7.27	7.27	4.67	1.36	18.94	35.42	3.67	1.00	1.00	1.00

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT. International costs based on Q3 2021 and exchange rates to USD as of H1 2023. UAE/KSA costs based on Q3 2023 and exchange rate to USD as of Q3 2023.

International exchange rate trends

In recent years, exchange rate movements have been significant as diverging economic performance has led to many major currencies experiencing significant shifts against the US Dollar. The Forex rate illustrates a country's economic stability with leading factors that can influence fluctuations and those that are constantly analyzed, including:

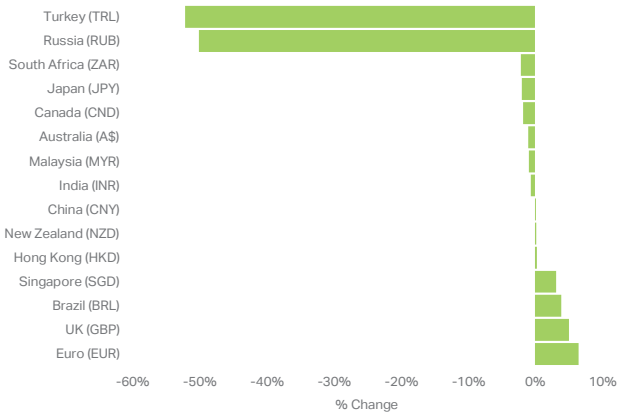
- Interest rates.
- A country's current account balance.

- Government debt.
- Political stability (Brexit, trade uncertainty and shifts, elections).
- Recessions.
- Commodity markets.
- International trade.
- Geopolitical conflict.

Currency depreciation against the US Dollar translates into a relative drop in building costs when expressed in US Dollars, making these locations/ regions relatively cheaper in US Dollar terms.

Exchange rate trends

Currency movements of the US Dollar against major currencies Q3 2023 compared to Q3 2022.



Source: www.xe.com

International prestigious office rental comparison

INTERNATIONAL PRESTIGIOUS OFFICE RENTAL COMPARISON

06

Region	Country	City	USD/m ² per annum
Africa			
	Algeria	Algiers	240
	Angola	Luanda	600
	Botswana	Gaborone	127
	Cameroon	Yaoundé	360
	Chad	N'Djamena	324
	Cote D'Ivoire	Abijan	396
	Democratic Republic of Congo	Kinshasa	420
	Egypt	Cairo	360
	Ethiopia	Addis Ababa	192
	Equatorial Guinea	Malabo	360
	Gabon	Libreville	240
	Ghana	Accra	336
	Kenya	Nairobi	156
	Madagascar	Antananarivo	132
	Malawi	Lilongwe	115
	Mali	Bamako	240
	Mauritania	Nouakchott	192
	Mauritius	Port Louis	240
	Morocco	Casablanca	240
	Mozambique	Maputo	384
	Namibia	Windhoek	162
	Nigeria	Abuja	300
		Lagos	660
	Rwanda	Kigali	192
	Senegal	Dakar	258
	South Africa	Cape Town	136
		Durban	115
		Johannesburg	144
		Gqeberha CBD	87
		Pretoria	136
	Tanzania	Dar Es Salaam	180
	Tunisia	Tunis	84
	Uganda	Kampala	173
	Zambia	Lusaka	227
	Zimbabwe	Harare	126

International prestigious office rental comparison

Region	Country	City	USD/m² per annum
Asia			
	China	Beijing (CBD)	1,163
		Guangzhou (ZJNT)	678
		Hong Kong (Central)	1,076
		Shanghai (CBD)	1,023
	India	Bangalore (CBD)	398
		Chennai (CBD)	172
		Mumbai (SBD BKC)	926
		New Delhi (CBD)	829
	Indonesia	Jakarta (CBD)	280
	Japan	Tokyo (5 Kus)	689
		Osaka (2 Kus)	797
	Malaysia	Kuala Lumpur (City Centre)	258
	Philippines	Manila (Makati)	388
	South Korea	Seoul (CBD)	592
	Singapore	Singapore (CBD)	1,066
	Taiwan	Taipei (Xinyi)	689
	Thailand	Bangkok (CBD)	291
	Vietnam	Ho Chi Minh City (CBD)	700
Australasia			
	Australia	Adelaide (CBD)	258
		Brisbane (CBD)	388
		Melbourne (CBD)	420
		Perth (CBD)	463
		Sydney (CBD)	388
	New Zealand	Auckland (CBD)	398
		Christchurch (CBD)	215
		Wellington (CBD)	344
Europe			
	Austria	Vienna	361
	Belgium	Brussels	398
	Czech Republic	Prague	312
	Denmark	Copenhagen	331
	England	Birmingham	377
		Bristol	431
		Cardiff	372
		Leeds	355
		London (City)	721
		London (West End)	1,302
		London (Carary Wharf)	517
		Manchester	366
		Newcastle	360
		Sheffield	353
	France	Paris	441
	Germany	Berlin	581

International prestigious office rental comparison

Region	Country	City	USD/m² per annum
		Frankfurt	560
		Hamburg	334
		Munich	614
	Greece	Athens	304
	Hungary	Budapest	226
	Ireland	Dublin	646
	Italy	Rome	560
		Milan	549
	Luxembourg	Luxembourg	689
	Netherlands	Amsterdam	431
	Norway	Oslo	657
	Poland	Warsaw	237
	Portugal	Lisbon	323
	Romania	Bucharest	205
	Scotland	Aberdeen	459
		Edinburgh	409
		Glasgow	344
	Spain	Barcelona	441
		Madrid	538
	Sweden	Stockholm	904
	Switzerland	Geneva	775
		Zurich	840
Middle East			
	Bahrain	Manama	167
	Lebanon	Beirut	354
	Oman	Muscat	187
	Qatar	Doha	533
	Saudi Arabia	Jeddah	319
		Riyadh	560
		Makkah	169
	Turkey	Istanbul	452
	United Arab Emirates	Dubai (Central Dubai)	578
		Dubai (New Dubai)	433
		Dubai (Old Dubai)	429
		Abu Dhabi	581

International prestigious office rental comparison

Region	Country	City	USD/m² per annum
North America			
	Canada	Montreal	237
		Toronto	366
		Vancouver	409
	USA	Atlanta	398
		Austin	570
		Baltimore	280
		Boston	657
		Chicago	474
		Houston	388
		Los Angeles	624
		Miami	990
		New York (Manhattan)	1,450
		Philadelphia	323
		Richmond	237
		Salt Lake City	291
	South America	San Francisco	969
		Seattle	560
		Silicon Valley	1,356
		Washington DC	570

International prestigious office rental rates are applicable as of 1 January 2023 and exclude VAT, but include GST where applicable. All rentals are net effective. Rents and capital values are on a net lettable area basis and pertain to the major submarket in each city.



Cogmanskloof Pass
Western Cape, South Africa

Building cost escalations

Building cost

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

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

Escalation rate

There seems to be two popular methods for calculating and expressing percentage annual increases, the average rate and the year-on-year rate. The average rate has no real use in calculating escalation and is of general interest only. The year-on-year rate should be used in escalation calculations, taking cognizance 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. The average of these is then calculated and then quoted as the average annual increase for that 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 may be a significant difference in the two rates in question. For example, in 2021 the year-on-year rate (January 2020 to January 2021) of the building cost inflation in South Africa was only 2.4 percent, while the average annual rate (comparing monthly indices) was 3.6 percent.

BUILDING COST ESCALATIONS

07

Calculation of estimated escalation of construction contracts

Pre-contract

Construction cost changes are on an ongoing basis for various reasons. Provision should therefore be made for changes in tender prices during the date of the estimate to the expected tender date. Adding the estimated current building cost to the total equals the anticipated tender amount.

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

Contract price adjustment

Provision is made for escalation in building costs during the contract period. The Contract Price Adjustment Provisions (CPAP) formula provides for 85 percent of the contract amount to be subject to escalation adjustment with the remaining 15 percent fixed. Furthermore, a factor must be introduced to take account of the cash flow payments during the construction period and 0.6 is often acceptable if a short method of calculation is employed.



The Contract Price Adjustment Provisions (CPAP) formula provides for 85 percent of the contract amount to be subject to escalation adjustment with the remaining 15 percent fixed.”

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

Tender price escalation

The annual year-on-year increase in building costs (i.e. tender prices) are based on the indices published by the Bureau for Economic Research (BER), University of Stellenbosch (January to January of each year), and for CPAP formula (Work Group 181 Commercial/Industrial buildings). It is published by Statistics South Africa (P0151), and is as follows:

Cost indices applicable to the building industry

YEAR	BER		CPAP		TMI
	Index (Jan=100)	Year-on-Year Increase	Index (Jan=100)	Year-on-Year Increase	
2019	100.0	-	100.0	-	1.00
2020	103.4	+3.4%	103.6	+3.6%	1.00
2021	105.9	+2.4%	109.8	+6.0%	0.96
2022	111.8	+5.6%	125.3	+14.1%	0.89
2023	123.1	+10.1%	133.1	+6.2%	0.92
2024	139.7	+13.5%	140.0	+5.2%	1.00
2025	143.1	+2.4%	145.9	+4.2%	0.98
2026	148.7	+3.9%	152.3	+4.4%	0.98
2027	157.3	+5.8%	159.4	+4.7%	0.99
2028	166.4	+5.8%	166.1	+4.2%	1.00

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

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

This forecast is based on information provided by the Bureau for Economic Research, Stellenbosch University.



Tender climate

The column marked TMI (Tender Market Indicator) indicates the tender climate. The building cost index, as published by the BER, is based on tender prices and has been deflated by the index for CPAP Work Group 181, which is based on the cost of labour and materials. The result is that the movement of tender prices (excluding the influence of market costs of labour and material), indicates the competitiveness of tendering. It represents a comparison, or rate of change, of BER and CPAP indices.

When the TMI (see graph on page 91) shows a downward gradient, this indicates a favourable tender market, i.e. the next point is numerically less, resulting from the calculation of BER divided by CPAP. This indicates that the increase in BER (tender index) is less than the increase in the CPAP index. Therefore, there is a favourable tender market from the viewpoint of the employer.

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

This tendency is also apparent on the cost indices graph (see page 91). When the two lines (CPAP and BER) converge, i.e. CPAP is decreasing and BER is increasing, you should negotiate. When the two lines diverge, i.e. CPAP is increasing and BER is decreasing, proceed to tender instead.

Base dates: To allow for the comparison of indices, a factor has been introduced resulting in an equal base for both BER and CPAP indices (i.e. January 2019 = 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 events take place in a particular country, many new construction works and associated infrastructure projects are awarded.

Projects of such magnitude can only be constructed by major contractors possessing the required expertise and resources. Often the unit costs of these projects are significantly higher than originally anticipated. Contractors at this level have little competition. Based on a favourable supply and demand, they price costs accordingly, resulting in client cost overruns and severe pressure on budgets.

Value-added tax

As the majority of developers are registered vendors in the property industry, any VAT 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 15 percent) should be added.

“

As the majority of developers are registered vendors in the property industry, any VAT on commercial property development is fully recoverable.”

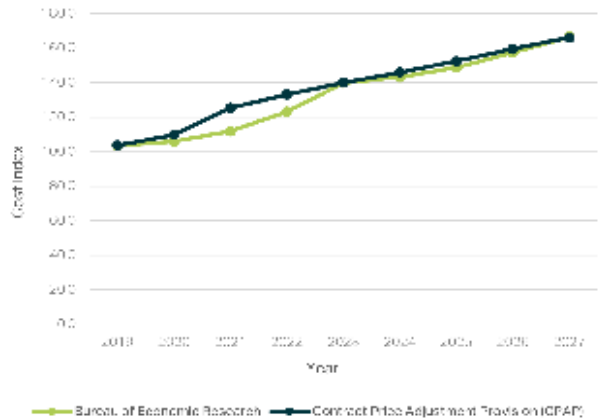
Awareness must be made of the effect that VAT has on cash flow over a period of time. This will vary according to the payment period of the individual vendor. However, in all cases, it will add to the capital cost of the project to the extent of interest on outstanding VAT for the VAT cycle of the vendor.

Graphs: BER and CPAP

January to January building cost percentage change

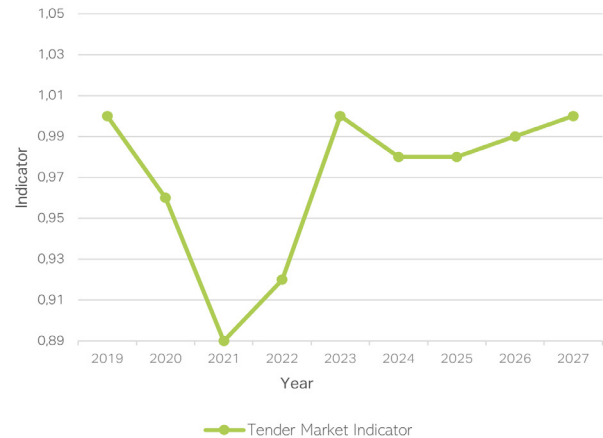


January building cost indices



Tender market indicator

BER deflated by CPAP



This graph gives an indication of the tender climate. It is the result of the relationship between BER and CPAP. Refer to the section on tender climate, page 88.



METHOD FOR MEASURING RENTABLE AREAS

08

Method for measuring rentable areas

South African Property Owners Association (SAPOA) methods

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

The most common method is recommended by SAPOA, entitled 'Method for Measuring Floor Areas in Buildings', Second Edition (effective from 7 November 2007). This replaces the previous SAPOA recommendation in 'Method for Measuring Floor Areas in Commercial and Industrial Buildings' (updated August 1991). However, it must be noted that the latest edition is approved for use from 7 November 2007 and should not be applied retrospectively.

Not detracting from the above publication, and by kind permission of SAPOA, below we have abbreviated and simplified the definitions contained in the document for easier understanding, and made our own comments on the use of rentable areas.

The document provides separate 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, trading warehouses, multi-storey, etc.
- Residential buildings, including houses, flats/apartments, townhouses, cluster houses, etc.



The most common method is recommended by SAPOA.”

For all office types, the following definitions and explanations are applicable:

The basis

The basis used in calculating the rentable area is the measurement of usable area, together with the common and supplementary area, as determined at each level. Unless otherwise indicated, the unit of measurement is 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 the atria are included, and all openings on other levels to form the atria are to be excluded.

Rentable area

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

The intended use is determined by the revenue-producing area of a building. This comprises the rentable area, supplementary area and parking. It is also used by those analysing the economic potential of a building.

- The rentable area has a minimum floor-to-ceiling height of 1.5 metres.
- The rentable area comprises usable area, plus common area.
- The rentable area excludes the supplementary area.
- This may produce additional revenue.

Usable area

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

It is intended to be the essential part of the rentable area, and the basis for the apportioning common area.

Common area

The common area is an area that the tenant has access to and/or use of. It is still considered part of the rentable area. The primary common area of the building is apportioned to tenancies pro-rata to the usable area of that tenancy.

The 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 usable area. Together with remote common areas that comprise 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 the primary common area, giving access to multiple tenancies. Accordingly, this may vary over the life of a multiple tenancy building.

Supplementary area

The supplementary area is any additional revenue-producing component that falls outside of the defined rentable area.

Supplementary areas need not be weatherproof.

For example, it comprises storerooms, balconies, terraces, patios, access/service passages, signage/advertising areas and parking areas demarcated for tenant use. 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 the atrium space are not included in the rentable area.

Entrance foyer

An entrance foyer is a portion of remote common area, including associated adjacent rooms and lobby. Lift area, lobby and entrance foyers that occur together with parking floors (not adjacent to office areas) comprise remote common area.

Major vertical penetrations

Major vertical penetrations, stairs and landings, lift shafts, flues, pipe shafts, vertical ducts, and their enclosing walls, exceeding 0.5m² in area, are deducted from the 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 are included in the primary common area.

Storage areas

Dedicated storage areas within the usable area are included as usable area.

Dedicated storage areas are listed separately as supplementary areas.

Retail, industrial, residential and other developments

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

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

In general

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', Second 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 permission to use extracts from this publication.

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.
- The cash flow analysis.

The initial return

The initial return is based on the net income during the first year of the development's operation. The return is expressed as a percentage per annum of the anticipated capital investment.

Escalation in both construction cost and cost of capital are both considered 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. Therefore, these are relatively accurate and easily understood in today's monetary 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.

RETURN ON
INVESTMENT

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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 determines 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, but 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 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 the 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 upon must be listed. These should 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, and 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 significant to note that there is a close relationship between the initial return and the IRR. However, this is to be applied with care by an experienced analyst.

Example:

Total capital expenditure (investment)		R 100,000,000
Rental in first year (net income)		R 10,500,000
Initial return in first year		10.50%
Escalation in net rental income		9.00% per annum
Net cash flow		
Year 0		-100,000,000
Year 1		10,500,000
Year 2		11,445,000
Year 3		12,475,050
Year 4		13,597,805
Year 5		14,821,607
Year 6		16,155,552
Year 7		17,609,551
Year 8		19,194,411
Year 9		20,921,908
Year 10		22,804,879
Year 11		24,857,319
Year 12		27,094,477
Year 13		29,532,980
Year 14		32,190,948
Year 15		35,088,134
Year 16		38,246,066
Year 17		41,688,212
Year 18		45,440,151
Year 19		49,529,764
Year 20 (+ terminal value)	53,987,443	614,428,518
	560,441,075	

The IRR with a 9.00 percent annual escalation in rental is 19.50 percent.



The terminal value is subjective. In this example, it 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 percent.

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 percent.

As a rule of thumb, the calculation of the approximate IRR of 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). Providing 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.

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

Where Green Star South Africa ratings are a requirement, cash flow analysis over longer periods of time 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 should be demonstrated to building owners and tenants in order to determine the viability scientifically.

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, would be given a specified return for a particular development.

The formula is determined as follows:

Return	=	$\frac{\text{Net Annual Income}}{\text{Total Capital Outlay (TCO)}}$
	=	$\frac{\text{Net Annual Income}}{y + x}$
		(Where 'y' = TCO, excluding land value and its corresponding loss of interest and 'x' = land value and its corresponding loss of interest)
Therefore x	=	$\frac{\text{Net Annual Income} - y}{\text{Return}}$
Now x	=	Land Value + Loss of Interest = Future Value of Land

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

Example:

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

Estimated escalated building cost	R 38,150,000
Professional fees	5,725,000
Legal and plan approval fees	45,000
Interim rates on ground during construction period	265,000
Loss of interest and/or bond interest at 10.5% p.a. compounded monthly over a 15-month construction period	3,180,000
Total capital outlay excluding land cost (y)	R 47,365,000
x	= $\frac{\text{Net Annual Income} - y}{\text{Return}}$
	= $\frac{\text{R6,000,000} - \text{R47,365,000}}{0.10}$
	= R12,635,000
Therefore land value is R12,635,000 discounted at 10.5% p.a. over 15 months = R11,087,204	(say) R 11 million

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

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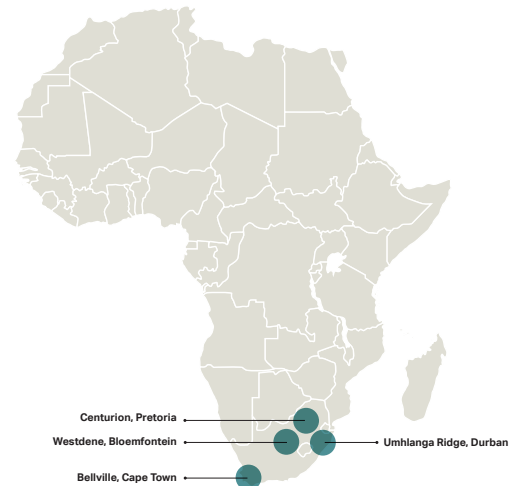
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